

REMARKS

Claims 1-13 are currently pending in the application, with claims 8 and 9 being withdrawn from consideration as being drawn to a non-elected invention. No claims are amended, added, or canceled by this response. Reconsideration of the rejected claims in view of the following remarks is respectfully requested.

Information Disclosure Statement

Applicants thank the Examiner for consideration of the Information Disclosure Statements filed June 17, 2004, February 20, 2006, and April 20, 2006, by returning the initialed Forms PTO-1449.

However, Applicants note that the Examiner failed to include a completely initialed Form PTO-1449 in that "NASA Technical Memorandum, NASA-TM-X3425, dated September 1976" was not initialed. Therefore, Applicants are submitting herewith a copy of the PTO-1449 submitted June 14, 2004 (stamped "COPY") and Applicants request a completely initialed copy of the Form PTO-1449 in the next communication from the U.S. Patent and Trademark Office.

Restriction Requirement

Applicant notes that the restriction requirement described in the paper of March 20, 2006 has been made final. However, Applicants respectfully request reconsideration

in view of the arguments submitted April 20, 2006, or at least withdrawal of the restriction and rejoinder of the withdrawn claims upon allowance of the application.

RESPONSE TO CLAIM REJECTIONS

1. Rejection under 35 U.S.C. § 102(b)

Claims 1 and 3 are rejected under 35 U.S.C. § 102(b) as being anticipated over Beele et al. (U.S. Pat. No. 5,985,467, "BEELE-1"). In this ground of rejection, it is asserted, amongst other contentions, that BEELE-1 discloses a substrate with a MCrAlY bond coat (undercoat), a chromia and/or alumina anchoring layer (middle layer) on the bond coat and a stabilized zirconia thermal barrier (top coat) on the anchoring layer.

In response to the anticipation rejections, Applicants note that a rejection under 35 U.S.C. § 102 can only be maintained if every element of the rejected claim is found in a single prior art document.

Applicants note that BEELE-1 fails to disclose every element of the rejected claim. Specifically, BEELE-1 discloses a middle or anchoring layer made of an oxide, and preferably alumina and/or chromium oxide, which is **doped** with nitrogen. (See, e.g., col. 3, lines 43-50 and col. 5, lines 42-63). However, in contrast with the present invention, which recites a middle layer made of Cr_2O_3 , i.e., a **chromium oxide**, whereas BEELE-1 discloses an oxide **doped with nitrogen**. (See, e.g., col. 3, lines 43-50 and col. 5, lines 42-63). Applicants respectfully submit that an oxide (e.g., aluminum oxide)

doped with nitrogen (as in BEELE-1) is not the same as the chromium oxide (*i.e.*, without nitrogen doping) as in the presently claimed invention.

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejection of claims 1 and 3 as being anticipated by BEELE-1.

2. Rejections under 35 U.S.C. § 103(a)

The Office Action contains the following rejections under 35 U.S.C. § 103(a):

- (a) Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over BEELE-1, and further in view of CZECH (US 5,273,712);
- (b) Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over BEELE-1, and further in view of NALK (US 4,714,624);
- (c) Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over BEELE-1, and further in view of STRANGMAN (US 5,514,482);
- (d) Claims 2, 4, and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over BEELE-1, and further in view of BEELE-2 (US 6,387,526);
- (e) Claim 11 is rejected under 35 U.S.C. § 103(a) as being unpatentable over BEELE-1 and BEELE-2, and further in view of CZECH (US 5,273,712);
- (f) Claim 12 is rejected under 35 U.S.C. § 103(a) as being unpatentable over BEELE-1 and BEELE-2, and further in view of NALK (US 4,714,624);
- (g) Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over

BEELE-1 and BEELE-2, and further in view of STRANGMAN (US 5,514,482).

In response, Applicants respectfully disagree with the Office's conclusions regarding obviousness. Therefore, Applicants respectfully request withdrawal of the obviousness rejections in view of the following remarks. Applicants respectfully submit that a *prima facie* case of obviousness is not established by BEELE-1 in view of the secondary and tertiary cited documents for at least the following reasons.

A *prima facie* case of obviousness requires:

- 1) the presence of all claimed elements,
- 2) the motivation to combine the separate reference teachings, and
- 3) a reasonable expectation of success.

The Office Action fails to establish any of these requirements.

(1) The Combination of Cited Documents Fails to Disclose All Elements of the Present Claims

First, regarding the presence of all claimed elements, Applicants respectfully submit that the requirement that all claimed elements be taught or suggested in the cited document, and this requirement has not been met.

For instance, assuming *arguendo*, if the teachings of the cited documents in rejections (a) – (g) were combined as suggested by the Office Action, the present

invention would not result.¹ In this regard, and as noted above, Applicants submit that BEELE-1 fails to specifically teach or suggest at least a middle layer made of Cr_2O_3 , *i.e.*, a **chromium oxide** as required by claim 1. In contrast to the present claims, BEELE-1 discloses an oxide **doped with nitrogen**. (*See, e.g.*, col. 3, lines 43-50 and col. 5, lines 42-63). Applicants respectfully submit that an oxide (*e.g.*, aluminum oxide) doped with nitrogen (as in BEELE-1) is not the same as the chromium oxide (*i.e.*, without nitrogen doping) as in the presently claimed invention.

Applicants respectfully submit that, to establish a *prima facie* case of obviousness, the U.S. Patent and Trademark Office bears the burden of showing that all of the claimed elements would be present in the combination. The Office Action fails to make that showing. Applicant respectfully submits that the anchoring layer of BEELE-1 including an oxide **doped with nitrogen** is not the same as Applicants' claimed Cr_2O_3 layer. Accordingly, since BEELE-2 and/or CZECH, NALK, and STRANGEMAN do not cure the deficiencies of BEELE-1, and the combination of BEELE-1 and BEELE-2 and/or CZECH, NALK, and STRANGEMAN does not disclose or suggest all the recitations of the present claims; wherefore, all rejections that rely on the combination of BEELE-1 should be withdrawn.

Therefore, Applicant respectfully requests withdrawal of the 35 U.S.C. § 103 rejections of claims 2, 4-7, and 10-13.

¹ Applicant notes that the primary document of BEELE-1 has been used in all of the rejections under 35 U.S.C. § 103.

(2) **The Cited Documents Fail to Provide Motivation to Arrive at the Claimed Invention**

Second, regarding motivation to combine the separate document teachings, to properly establish a *prima facie* case of obviousness, even assuming, *arguendo*, that the rejection is based on a proper combination, the combined teachings must disclose all of the recitations of the rejected claims and the cited document(s) must contain some suggestion or motivation for such combination. Applicants respectfully submit that the cited documents fail to provide specific motivation to arrive at the claimed invention. Thus, Applicants respectfully submit that mere statements that it would have been obvious to one of ordinary skill in the art without pointing to specific support in the cited document **is not sufficient** to satisfy the *prima facie* case of obviousness.

The requirement of a showing of motivation is intended to prevent hindsight analysis of an Applicants' claimed invention. It is intended to prevent the Office from simply choosing separate teachings that *can* be combined to make an Applicants' claimed invention, without some additional underlying suggestion for actually making the combination. It is intended to prevent the Patent Office from combining teachings so as to arrive at an Applicants' claimed invention, then to state, "Voila! The improvement is in the combination!" (See, e.g., Office Action, p. 4, lines 2-4, p. 5, lines 13-15, p. 6, lines 15-17, p. 7, lines 9-11). It is intended to prevent exactly the reasoning that the outstanding Office Action sets forth.

The Office Action fails to provide any reasonable reason why a person of skill in the art would have *wanted* to combine the disclosures of CZECH, NALK, or STRANGEMAN with BEELE-1 or BEELE-1 and BEELE-2. Moreover, Applicants respectfully submit that the present specification cannot serve as the motivation to combine reference teachings and that the motivation to combine teachings must come from the prior art. The Office Action fails to set forth any reason at all of why Applicant's chromium oxide layer (*i.e.*, without nitrogen doping) would be an *improvement* on any of the particular applications disclosed in BEELE-1 or BEELE-1 and BEELE-2. Thus, without more, the Office Action fails to satisfy the second of three requirements for making a *prima facie* case of obviousness.

Therefore, for at least the foregoing reasons, Applicants respectfully submit that the presently claimed coating material would not have been obvious in view of the cited documents. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103 rejections of claims 2, 4-7, and 10-13.

(3) There Would Have Been no Expectation of Success

Finally, despite the assertions in the Office Action, there would have been no reasonable expectation of success of achieving the specific recitations of the present claims. There is no reason to believe that Applicant's particularly claimed coating would have resulted by combining the cited documents in rejections (a) – (g).

In particular, Applicants note that in contrast with the present claims, BEELE-1 discloses a middle or anchoring layer made of an oxide, and preferably alumina and/or chromium oxide, which is **doped** with nitrogen. (*See, e.g.*, col. 3, lines 43-50 and col. 5, lines 42-63). However, the present invention recites a middle layer made of Cr_2O_3 , *i.e.*, a **chromium oxide** that is not doped with nitrogen. Applicants respectfully submit that an oxide (*e.g.*, aluminum oxide) doped with nitrogen (as in BEELE-1) is not the same as the chromium oxide (*i.e.*, without nitrogen doping) used in the presently claimed invention. Therefore, Applicant respectfully submits that there is no reasonable expectation that its particularly claimed coating would have resulted by combining the cited documents in rejections (a) – (g).

Therefore, in view of the numerous differences as noted above, Applicants respectfully submit that the combinations of the cited documents are incompatible, and there can be no reasonable expectation of success in achieving Applicants' claimed invention.

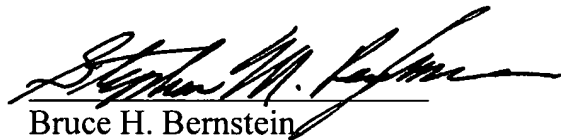
Therefore, Applicants respectfully submit that the presently claimed coating material would not have been obvious in view of the combination of the cited documents in rejections (a) – (g). Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103 rejections.

CONCLUSION

In view of the foregoing, it is submitted that none of the cited documents of record, either taken alone or in any proper combination thereof, anticipates or renders obvious the Applicant's invention, as recited in each of claims 1-13. In addition, the applied cited documents of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be appropriate.

Respectfully submitted,
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